

ABSTRACT OF THE DISCLOSURE

The present invention relates to a safety design and risk management of a reactor of a nuclear plant, and more particularly, to an ex-vessel core melt device preventing molten core concrete interaction, which is to handle very severe accidents caused by cooling-function loss to nuclear fuel. Due to the large quantity of nuclear fuel existing in the reactor and decay heat which is latent and continuously generated within the fuel mass for a long time after the nuclear chain reaction, the nuclear fuel is melted in gross at temperature up to 2,500 degrees centigrade, and thereby the surrounding structures and a reactor vessel are attacked and damaged, and in the end, a containment building floor is eroded. This situation may cause environmental radioactivity either by ultimate penetration of the cavity floor or by the buildup of non-condensable gas pressure (i.e., pressurizing the containment building structure), unless the reaction is arrested. The ex-vessel core melt retention device preventing molten core concrete interaction, which is installed for alleviating risks due to unexpected accidents over accidents considered as a design criteria of a nuclear plant, includes: horizontal jacket pipes located on a shell boundary of a cavity floor, the horizontal jacket pipes having water inlets A formed at their lower half in an appropriate density for allowing water to enter the bottom of the pipes; vertical pipes connected at both ends of the horizontal jacket pipes in the form of a dovetail to communicate with each other; and a water supply part located at the lower portion of the horizontal jacket pipes for allowing water to enter from the whole area of the bottom.